

### Remarks

The application contains pending claims 1-33, of which: claims 27-33 are allowed; claims 1, 2, 9-12, 14-18, 20-23, 25 and 26 stand rejected; and, claims 3-8, 13, 19 and 24 are objected to. Also, the abstract has been objected to.

Reconsideration of the present application, as amended, is respectfully requested.

1. The Examiner has objected to the abstract, stating that is unclearly expressed. An amended abstract is herewith submitted.

2. Claims 1 and 20 stand rejected “under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Schwar alone or in view of Venaleck.” Applicant respectfully traverses the rejection of Claims 1 and 20.

As to 35 U.S.C. 102(b), the Examiner states that Schwar et al. disclose a system with a probe card 22, contacts 23 and a movable cover 24, all within testing machine 20. However, as the Examiner points out, the Schwar et al. hinged frame 24 is not disclosed to overlap or “cover” the eight concentric circles of 512 pins 23, nor is frame 24 anywhere suggested to do so. Rather, it defines two large, concentric apertures 76 and 78 that define an annular lip 80 sized to receive the device under test (DUT) and force it down upon the array of pins 23. The Schwar et al. frame 24 does not cover or “overlap” pins 23, and Schwar et al. does not disclose the invention of claims 1 and 20.

The Examiner states that it would have been obvious under 103(a) “to form the Schwar cover to include a larger lip 80 as in Venaleck, fig 1A” as this “would enable the cover to more securely press on the DUT.” It has long been the rule that “[o]bviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combinations.” In

re Geiger, 815 Fed. 2d 686, 2 U.S.P.Q. 1276 (Fed. Cir. 1987); In re Regel, 526 Fed. 2d 1399, 188 U.S.P.Q. 137 (CCPA, 1975); In re Bond, 910 Fed. 2d 831, 15 U.S.P.Q. 2d 1566 (Fed. Cir. 1990) (per curiam). Neither Schwar et al. nor Venaleck et al. provide any teaching, suggestion or incentive to modify the size, shape or configuration of the Schwar et al. frame 24, and the Examiner has cited no other reference providing the necessary suggestion or motivation to modify the frame 24 of Schwar et al. There is no discussion or suggestion in either of Schwar et al. or Venaleck et al. that the lip 80 or any other aspect of frame 24 is too small or in any way deficient in performing its intended operation, which is “to securely press on the DUT.” Moreover, if one *were* to enlarge the lip 80 of frame 24<sup>1</sup>, the upper portion of frame 24 would overlap, impinge upon and likely damage the passive elements 66 of DUT 30. Any modification that defeats the alleged benefit from a 103(a) combination or that otherwise damages or harms the resulting combined structure inherently teaches against such combination. Absent the requisite suggestion or motivation and in view of the damaging effect likely to ensue, combination of Venaleck et al. with Schwar et al. is improper to support a rejection under §103, and claims 1 and 20 are allowable over Schwar et al. in view of Venaleck et al.

3. Claims 2, 9, 10, 11, 12, 14-18, 25 and 26 stand rejected “under 35 U.S.C. 103(a) as being unpatentable over Schwar view of Inoue, Schuck, Venaleck and Grabbe.” Applicant respectfully traverses the rejection of Claims 2, 9, 10, 11, 12, 14-18, 25 and 26.

Claims 2, 9, 10, 11 and 12 all depend from claim 1, and claims 25 and 26 depend from claim 22, and each is believed allowable for the reasons presented herein for the

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<sup>1</sup> By including a “larger lip 80,” applicant understands the Examiner to mean that the diameter of aperture 78 is reduced.

allowability of claims 1 and 22, respectively. In addition thereto, the following individual responses to the Examiner's comments are also provided.

Regarding claim 2, the Examiner stated that Schwar et al. does not disclose "z-axis movement", but that it "would have been obvious to form Schwar with a receiver such as that of Inoue [sic] at 12 Schuck (cover 22) or Grabbe (cover 10')," and that "[t]his would provide greater press down force and alignment for the DUT 30." Applicant respectfully traverses the rejection of claim 2. As stated above, a 103(b) obviousness combination cannot be established without some teaching, suggestion or incentive supporting the combination. In re Geiger; In re Regel; In re Bond. None of Schwar et al., Inoue et al., Schuck or Grabbe provide any teaching, suggestion or incentive to modify the frame 24 of Schwar et al., to have z-axis movement, and the Examiner has cited no other reference providing the necessary suggestion or motivation to so modify the frame 24 Schwar et al. The Examiner states that such modification would provide greater press down force, but such alleged result is speculative and unsupported and is not taught by any of the cited references to enhance the operation of the Schwar et al. device. Further, the manner of providing the hingedly connected frame 24 with z-axis movement is nowhere suggested or taught. Also, there is no suggestion in Schwar et al. or any of the references suggesting that the Schwar et al. device is in any way in need of additional press down force. In view thereof, combination of Schwar et al. with any of Inoue et al., Schuck or Grabbe is improper to support a rejection under §103, and claim 2 allowable over Schwar et al. in view of Inoue et al., Schuck or Grabbe.

As to claim 9, the Examiner stated that "attachment of Schwar base 40 or Grabbe base 18 to the card using selected means, such as those recited ... do not seem to be basic to

the inventive concept” and that it would have been “[o]bvious to attach the cover by magnets, etc these being known alternative to fasteners.” The manner of attachment of Schuck’s base 40 to backpanel 14 does not appear to be recited, and Grabbe’s “connector 18 is mounted on the circuit board 14 by means of fasteners 76 which extend through holes in the circuit board from the underside thereof and are threaded into metallic threaded inserts 72....” In other words, screws securely fix the Grabbe connector 18 to its circuit board 14. In the invention of claim 9, connection by at least one magnet facilitates removal of the cover from the probe card by simply applying sufficient pulling force. Use of one or more magnets in the invention of claim 9 is not an equivalent to having screws connecting the cover to the probe card as an additional mechanism would have to be provided to first remove the one or more screws and then pull the cover away. Further, there is no teaching or suggestion provided in the cited references to use magnetic elements to connect the cover to the probe card. Claim 9 is allowable over Schwar et al. in view of Schuck and Grabbe.

As to claim 10, Venaleck shows a pin and slot combination, not a bayonet configuration as described and claimed, and claim 10 is allowable over Schwar et al. in view of Venaleck.

Regarding claim 11, as with the magnetic connection of claim 9, a cover connected to the probe card with adhesive may be removed merely by applying sufficient pulling force and, as with claim 9, adhesive is not an equivalent to connecting the cover with screws, which would have to first be individually removed to then free the cover from the probe card. Claim 11 is allowable over Schwar et al. in view of Schuck and Grabbe.

As to claim 12, Schuck does not appear to teach or suggest creation of a sealed space that forms a clean space having less than 100 parts per million of particulate matter exceeding one micron in diameter, as claimed. Claim 12 is allowable over Schuck.

Regarding claim 18, no reference has been cited that provides a cover movable generally along an X-axis oriented parallel to a plane defined by a bottom surface of the probe card, and claim 18 is allowable over the cited references.

Regarding claim 14 “and others”, the Examiner stated that “the term ‘holder’ as broadly recited does not define over a part like 52 of Schuck or over the Grabbe cover 10 holes that receive screws (holders) 74.” It is unclear whether the Examiner is combining Schuck and Grabbe with Schwar et al. or citing them individually. Nevertheless, the heat sink 52 of Schuck is nowhere described or suggested to be a holder. The hole 24 of Schuck is defined as large enough to “allow for a variety of heat sink alternatives” and nowhere is described as being engaged by a holder or the heat sinks 52. Further, claim 14 requires the engagement surface be formed to provide the holder to extend into the recess to hold the cover. There is no indication or teaching that the heat sink 52 extends into the hole 24 to hold the cap 22. Rather as shown in Fig. 8 of Schuck, it is the cap 22 that holds the heat sink in place. As to the holes and screws 74 of Grabbe, element 10 is a heat sink, and screws 74 threadedly engage with the threaded inserts 72, not the holes in heat sink 10. Claim 14 is allowable over Schwar et al. in view of Schuck or Grabbe.

As to the invention of claim 16, the Examiner stated that it is “readable on use of cover with key-lock means (as in closed door) to hold it in place [and] such use is unrelated to inventive concept and does not provide patentable distinction.” On the contrary, as magnet and adhesive connection of the cover with the probe card facilitates the removal of

the cover, a key-lock recess for receiving the holder facilitates engagement of the holder with the cover to provide reliable grasping and removal of the cover. Such key-lock arrangement of a cover for a probe card is not shown in the cited references, and claim 16 is allowable over the art of record.

Regarding citation of Inove [sic] as applied to claims 9-11, use of magnets, adhesive or bayonet means in place of fastener 13 for attachment of a cover to a probe card would not be an equivalent, as discussed above, as removal of the cover would first require removal of the fastener – a separate step – and then removal of the cover. Claims 9-11 are allowable over Inoue.

4. Claim 22 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Schwar et al. alone or in view of Venaleck. The Examiner stated that Schwar et al. does not disclose testing of a die on a wafer, but that it “would have been obvious to use the Schwar machine to test such items as that is standard use.” Applicant respectfully traverses the rejection of claim 22.

Schwar et al. does disclose a fixture for holding an integrated circuit chip testing board during testing of an on-board integrated circuit chip by a design verification system. However, in addition to not disclosing testing of a die on a wafer, and as discussed above with respect to the allowability of claim 1, the Schwar et al. hinged frame 24 is not disclosed to overlap or “cover” the eight concentric circles of 512 pins 23, nor is frame 24 anywhere suggested to do so. Moreover, the frame 24 of Schwar et al. is taught to be in the down position during testing, while claim 22 requires the cover to be removed from the contacts while the probe card is in the testing machine for testing. Any modification of the Schwar et al. fixture to leave frame 24 open during testing would make the Schwar et al.

device not work as intended and would be contrary to the teachings of Schwar et al. In addition as discussed above with respect to the allowability of claim 1, there is no suggestion in Schwar et al. or Venaleck to combine the two references to modify Schwar et al., to have a cover that covers the pins 23 or to leave the frame 24 open during testing. To so modify Schwar et al. would be contrary to the teachings of Schwar et al., as discussed above. It would therefore be improper to combine Venaleck et al. with Schwar et al. to support a rejection of claim 22 under §103, and claim 22 is allowable over Schwar et al. in view of Venaleck et al.

5. Claim 21 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Schwar et al. in view of Schuck and Cameron. The Examiner stated that the Schwar/Schuck combination lacks aperture sheaves, which are shown by Cameron, Figs. 11, 12, and that it would have been “[o]bvious to use same in Schwar/Schuck to enable easy opening and closing of the aperture.” Applicant respectfully traverses the rejection of claim 21.

As discussed above with respect to the allowability of claim 2, it would be improper to combine Schwar et al. and Schuck as there is no teaching, suggestion or incentive supporting such combination. Likewise, even if it were appropriate to combine Schwar et al. and Schuck, there is no teaching, suggestion or incentive supporting the combination of Cameron with a Schwar/Schuck combination. Cameron teaches that the iris-type shutter assembly 88 provide EMI and environmental protection for contacts 24. The frame 24 of Schwar et al. is provided to force testing board 30 against pins 23, not to protect pins 23, and there is no teaching or suggestion provided to add iris assembly 88 of Cameron to the frame 24 of Schwar et al. Absent the requisite suggestion or motivation, combination of

Cameron with a Schwar/Schuck combination is improper to support a rejection of claim 21 under §103, and claim 21 is allowable over Schwar et al., Schuck and Cameron.

6. Claims 1, 2, 18, 22 and 23 stand rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Jeong. The Examiner stated that “Jeong shows a system with probe card 30 with contacts 133 for testing DUT 10 and a removable cover 50. The movement in fig 6A could be read as generally is a Z-axis.” Applicant respectfully traverses the rejection of claim 21.

Jeong et al. does not disclose the invention of claims 1, 2, 18, 22 or 23. For example, claim 1 recites that the removable cover is connected to the probe card. As best understood, the cover 50 of Jeong et al. does not come in contact with the probe card 30, let alone be connected with it. Also, movement of the cover 50 of Jeong et al. between first and second positions neither covers nor uncovers the contacts (test probe 33), as recited in claim 1. The Jeong et al. test probes 33 are located under lead frame 10 and appear to “covered” regardless of the position of cover 50. It is noted that the purpose of cover 50 is primarily to press down upon lead frame 10 to initiate the testing procedure and thus, contrary to the invention of claim 22, the cover 50 of Jeong et al. is “removed” during testing.

Claims 1 and 22 and the claims depending therefrom, including 2, 18 and 23, are allowable over Jeong et al.

7. The allowance of claims 27-33 and the allowability of claims 3-8, 13, 19 and 24 if rewritten is acknowledged.

In view of the foregoing amendments and remarks, all pending claims 1-33 are believed to be condition for allowance and action in accordance therewith is respectfully



requested. If after reviewing this amendment the Examiner feels any issues remain that must be resolved before the application can be passed to issue, the Examiner is invited to contact the applicants' undersigned representative by telephone to resolve such issues.

Respectfully Submitted,

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